

WHAT IS CLAIMED IS:

1. A method of protecting a silica-containing article used in the manufacture of an optical fiber, the method comprising the steps of:

5 providing a silica-containing article used in the manufacture of an optical fiber; and

applying a protective layer to the silica-containing article.

2. The method of claim 1, wherein the protective layer is applied to a consolidated glass surface.

10 3. The method of claim 2, wherein the protective layer ablates during subsequent processing of the silica-containing article.

15 4. The method of claim 2, wherein the protective layer leaves essentially no detrimental inorganic residue after ablating.

5. The method of claim 2, wherein the protective layer inhibits bonding of particulates to the silica-containing article.

20 6. The method of claim 5, wherein the protective layer inhibits bonding by occupying active sites on the silica-containing article such that particulates cannot bond to those active sites.

25 7. The method of claim 6, wherein the active sites include groups that will form a SiMO_x compound, where M is a metal.

8. The method of claim 2, wherein the protective layer includes carbon.

30 9. The method of claim 2, wherein the protective layer includes an organic material.

10. The method of claim 9, wherein the protective layer includes at least one of a water soluble polymer, a thermoplastic polymer, a latex based polymer, a thermoset polymer, and a UV curable polymer.

5 11. The method of claim 9, wherein the organic material forms a self-assembled monolayer on the silica-containing article.

10 12. The method of claim 9, wherein the organic material includes at least one of hydrocarbon silane, fluorocarbon silane, epoxy functional silanes, acrylate functional silane, amine functional silane, thiol functional silane, phenyl functional silane, an alkyl and aryl ammonium compound, acrylate polymer, polyvinyl alcohol, and a wax.

15 13. The method of claim 2, further comprising the step of removing particulates from the protective layer.

14. The method of claim 2, further comprising the step of removing the protective layer from the silica-containing article during further processing.

20 15. The method of claim 2, further comprising the step of removing the protective layer from the silica-containing article before fiber draw.

25 16. The method of claim 2, wherein the silica-containing article includes one of a core cane and a core blank used in an outside vapor deposition process.

17. The method of claim 2, wherein the silica-containing article includes a glass tube used in an inside vapor deposition process.

30 18. The method of claim 2, wherein the silica-containing article is a fiber preform from which an optical fiber can be drawn and the protective layer is applied directly onto the fiber preform.

19. The method of claim 18, further comprising the step of drawing an optical fiber from the fiber preform.

5 20. The method of claim 19, wherein the protective layer ablates during drawing of an optical fiber from the fiber preform.

21. The method of claim 20, wherein the protective layer leaves essentially no detrimental inorganic residue after ablating.

10 22. The method of claim 18, wherein the protective layer inhibits bonding of particulates to the fiber preform.

15 23. The method of claim 22, wherein the protective layer inhibits bonding by occupying active sites on the fiber preform such that particulates cannot bond to those active sites.

24. The method of claim 23, wherein the active sites include groups that will form a SiMO_x compound, where M is a metal.

20 25. The method of claim 18, wherein the protective layer includes carbon.

26. The method of claim 18, wherein the protective layer includes an organic material.

25 27. The method of claim 26, wherein the protective layer includes at least one of a water soluble polymer, a thermoplastic polymer, a latex based polymer, a thermoset polymer, and a UV curable polymer

30 28. The method of claim 26, wherein the organic material forms a self-assembled monolayer on the fiber preform.

29. The method of claim 26, wherein the organic material includes at least one of hydrocarbon silane, fluorocarbon silane, epoxy functional silanes, acrylate functional silane, amine functional silane, thiol functional silane, phenyl functional silane, an alkyl and aryl ammonium compound, acrylate polymer, polyvinyl alcohol, and a wax.

30. The method of claim 18, further comprising the step of removing particulates from the protective layer.

31. The method of claim 18, further comprising the step of removing the protective layer from the fiber preform before fiber draw.

32. The method of claim 18, wherein the fiber preform is formed by adding additional soot materials by an outside vapor deposition process onto a core cane ~~and~~ or a core blank, the method further comprising the steps of applying a protective layer to at least one of the core cane and the core blank and removing particulates from the protective layer on the at least one of the core cane and the core blank.

33. The method of claim 18, wherein the fiber preform is formed by an inside vapor deposition process from a silica-containing tube, the method further comprising the steps of applying a protective layer to the silica-containing tube and removing particulates from the protective layer on the silica-containing tube.

34. An intermediate product used in the manufacture of an optical fiber and protected against break-inducing particulates, the intermediate product comprising:
a silica-containing article; and
a protective layer.

35. The intermediate product of claim 34, wherein the protective layer can be removed before subsequent processing of the intermediate product.

36. The intermediate product of claim 34, wherein the protective layer can be ablated during subsequent processing of the intermediate product.

5 37. The intermediate product of claim 36, wherein the protective layer leaves essentially no detrimental inorganic residue after ablating.

38. The intermediate product of claim 34, wherein the protective layer inhibits bonding of particulates to the silica-containing article.

10 39. The intermediate product of claim 38, wherein the protective layer inhibits bonding by occupying active sites on the silica-containing article such that particulates cannot bond to those active sites.

15 40. The intermediate product of claim 39, wherein the active sites include groups that will form a SiMO_x compound, where M is a metal.

41. The intermediate product of claim 38, wherein the protective layer includes carbon.

20 42. The intermediate product of claim 38, wherein the protective layer includes an organic material.

25 43. The intermediate product of claim 42, wherein the protective layer includes at least one of a water soluble polymer, a thermoplastic polymer, a latex based polymer, a thermoset polymer, and a UV curable polymer.

44. The intermediate product of claim 42, wherein the organic material forms a self-assembled monolayer on the silica-containing article.

30 45. The intermediate product of claim 42, wherein the organic material includes at least one of hydrocarbon silane, fluorocarbon silane, epoxy functional

silanes, acrylate functional silane, amine functional silane, thiol functional silane, phenyl functional silane, an alkyl and aryl ammonium compound, acrylate polymer, polyvinyl alcohol, and a wax.

5 46. The intermediate product of claim 34, wherein the silica-containing article includes a fiber preform from which an optical fiber is drawn.

10 47. The intermediate product of claim 34, wherein the silica-containing article includes one of a core cane and a core blank used in an outside vapor deposition process.

 48. The intermediate product of claim 34, wherein the silica-containing article includes a glass tube used in an inside vapor deposition process.

15 49. The intermediate product of claim 34, wherein the protective layer is applied to a consolidated glass surface.